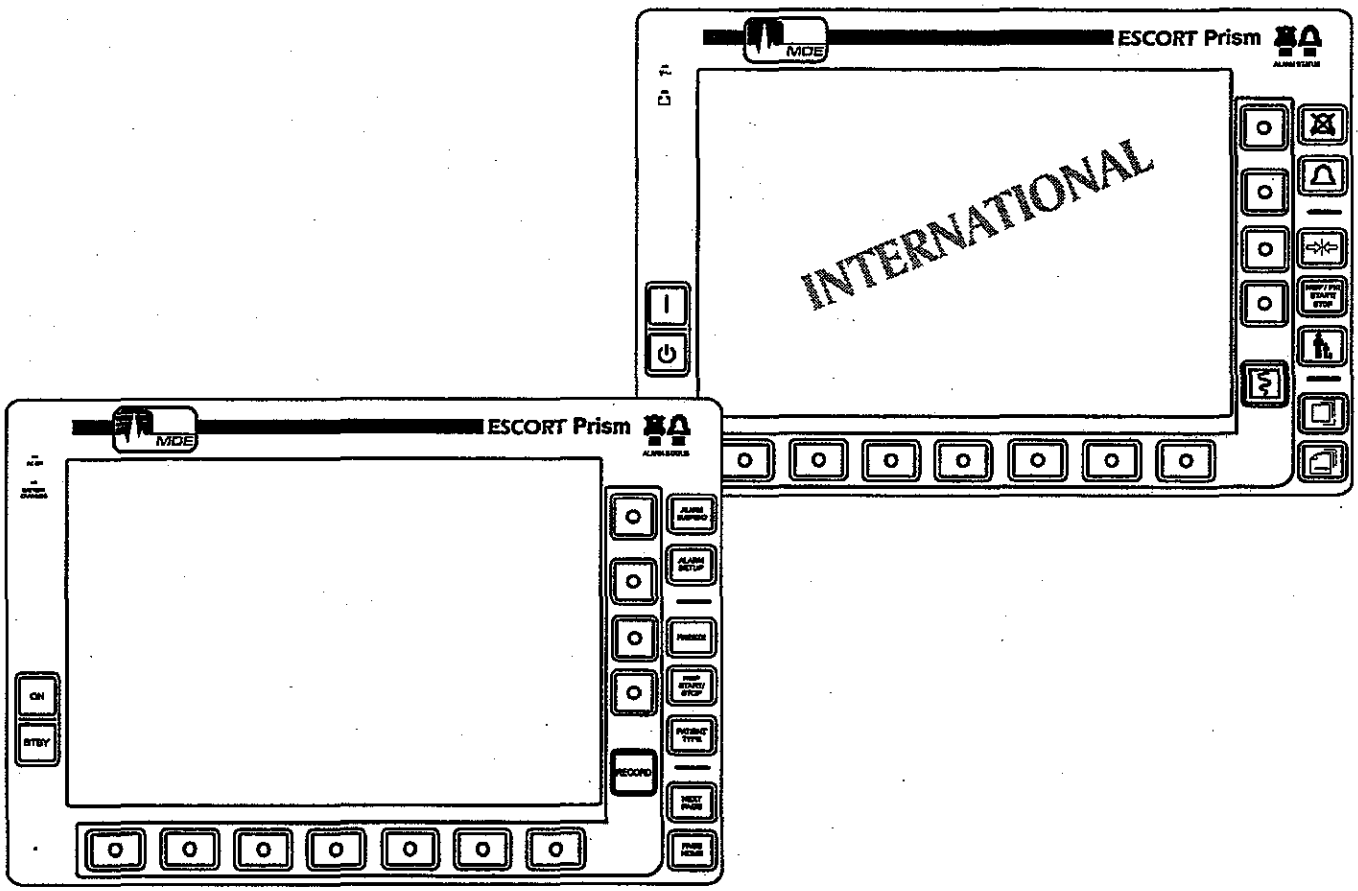
ESCORT-PRISM™
4 TRACE PATIENT MONITOR
SERVICE MANUAL



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PATENT INFORMATION

MDE US Patents: 4,757,520; 4,922,918

Nellcor US Patents: 4,621,643; 4,830,014; 4,700,708; 4,770,179; 4,869,254; 4,685,464; 4,802,486

CERTIFICATIONS

The Prism has received the following certifications:

CSA-NRTL/C UL2601-1 / IEC601-1
FCC Part 90.217 (UHF), FCC Part 15 (Spread Spectrum)

WARRANTY

The Prism Monitor is warranted against defects in materials and workmanship for a period of twelve (12) months from the date of shipment to the original purchaser. Batteries, cables, cuffs, and sensors are warranted ninety (90) days from date of shipment. Warranty is valid only to the original buyer. Defective equipment should be returned freight prepaid to Medical Data Electronics. Equipment returned with defective parts and assemblies will be either repaired or replaced. This warranty is not applicable if repair has been attempted, if the instrument has been damaged due to operation outside the environmental and power specifications for the product, or due to improper handling or use.

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This manual contains some preliminary information. There are some references to ESCORT II and ESCORT II 300 or 100 throughout which may be erroneous and should be assumed to be referring to the Prism monitor. These references will be corrected in the next official release of this manual.

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The Prism monitor is warranted against defects in materials and workmanship for a period of twelve (12) months from the date of shipment to the original purchaser. Batteries, cables, cuffs, and sensors are warranted ninety (90) days from date of shipment. Warranty is valid only to the original buyer. Defective equipment should be returned freight prepaid to Medical Data Electronics. Equipment returned with defective parts and assemblies will be either repaired or replaced. This warranty is not applicable if repair has been attempted, if the instrument has been damaged due to operation outside the environmental and power specifications for the product, or due to improper handling or use.

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Chapter 1: Introduction

1 INTRODUCTION

1.1 General Description

The ***PRISM*** Series monitor is a modular patient monitor capable of keeping track of several parameters simultaneously, including dual vector ECG, Respiration, SpO_2, Noninvasive Blood Pressure, one to three Invasive Blood Pressures, 2 Temperatures, Mainstream/Sidestream $ETCO_2$, and Cardiac Output. The ***PRISM*** features many modular components that are interchangeable with other ***ESCORT II 100*** and ***300*** Series modular monitors.

The ***PRISM*** monitor is factory equipped with a color Liquid Crystal Display (LCD) screen that is capable of displaying as many as four waveform traces simultaneously. An electroluminescent (EL) display is also available. Both of these display types accurately reproduce physiological waveform abnormalities, providing the detail needed to make clinical decisions.

The ***PRISM*** monitor may be operated with AC, battery, or external DC power. Battery operation is provided by two modular batteries, with operating time ranging from 1.5 to 3 hours, depending upon configuration.

The ***PRISM*** can monitor adult, pediatric, and neonatal patients. The appropriate monitoring mode for each patient, ADULT, PED, or NEO, is selectable. Changing from one mode to another automatically changes all appropriate algorithms, alarm limits, and any applicable parameter defaults.

The ***PRISM*** monitor minimizes the number of function keys you see at any one time. Some keys, fixed function keys, are labeled on the front panel and always retain the same function. Other keys, softkeys, are not labeled and vary in function according to the labels displayed adjacent to them on the monitor's screen. There are eight softkeys, five located at the bottom of the front panel, and three located on the right side of the front panel. For more information on the monitor keys and their functions, see Chapter 2, "Controls & Indicators."

Factory defaults have been established and installed for all system and physiological monitoring issues (i.e., alarm settings, default ECG lead, etc.). These values may be easily reconfigured to meet your specific needs.

This service manual provides readily available documentation to troubleshoot, repair, and maintain the PRISM monitor. It outlines functional block diagrams, board layouts, schematic diagrams, and parts listings for each of the hardware modules of the PRISM for use by technical service personnel. Also included are performance check and preventive maintenance sections to keep your PRISM monitor(s) working efficiently and reliably for many years to come.

1.2 System Configuration & Options

The vital sign parameters you choose for your PRISM monitor are factory configured in a Multiparameter Module. The Multiparameter Module is removable, allowing you to move it from one monitor to another as necessary. The Multiparameter Module includes dual vector ECG and can be equipped with several parameters.

The PRISM monitor can be equipped with many additional options, including a bedside recorder module and a wireless central station transceiver module. Table 1-1 lists a sample of available options.

Table 1-1: Prism Options

Model Number	Description
Option 19E	Defibrillator
Option 20E	Defibrillator / Noninvasive Pacer
Option 21	Defibrillator Slide Mount
Option 22	Electroluminescent Display
20001	**Multi-Parameter Module (includes dual vector ECG)**
Option 27	Add Respiration
Option 28	Add Noninvasive Blood Pressure
Option 29	Add Noninvasive Blood Pressure and Temperature
Option 30	Add SpO2
Option 31	Add Invasive Blood Pressure
Option 32	Add Invasive Blood Pressure and Temperature
Option 33	Add (2) Invasive Blood Pressures
Option 34	Add (2) Invasive Blood Pressures and Temperature
Option 35	Add Temperature
Option 36	Add ETCO2 (Note: Requires ETCO2 sensor, sold separately)
Option 37	Add Graphic Trends
Option 38	Add Hewlett-Packard Merlin ECG & Invasive Blood Pressure Connectors
20002	**Multi Channel Thermal Array Recorder Module**
20011	**E3200B LINK Transceiver Module**
20012	**UHF Telemetry Receiver Module 430 - 470 MHz**
1200LR-01	**Single Vector UHF Long Range Transmitter 450 - 470 MHz**
20013	**Dual Vector UHF Long Range Transmitter 450 - 470 MHz**
20014	**Dual Vector UHF Long Range Transmitter 430 - 450 MHz**
20015	**E3200A UHF LINK Transceiver Module**
20020	**Mainstream ETCO2 Sensor**

1.3 Safety Considerations

Read the following sections before using the PRISM monitor. Several warnings are presented to both increase patient safety and prevent damage to the monitor. Rear panel symbols are displayed and defined in section 1.3.2.

1.3.1 Warnings

Warnings are included throughout the manual. All warnings are presented in the following format.

WARNING: Read this service manual in its entirety prior to attempting any service or repair.

WARNING: ONLY qualified technicians possessing specific experience and expertise in the servicing of biomedical equipment should attempt servicing the PRISM monitor.

WARNING: HIGH VOLTAGES are present within the PRISM monitor. Use caution when servicing.

WARNING: Always use an ESD (Electro-Static Discharge) grounding wrist or ankle strap that is properly grounded. Always perform service in an ESD safe environment.

WARNING: The PRISM is intended only as an adjunct in patient assessment. It cannot replace skilled nursing care and proper surveillance. Keep high risk patients under close surveillance.

WARNING: Carefully read the PRISM Operator's Manual, all directions for use of monitor accessories, and all precautionary information before attempting clinical use of the PRISM.

WARNING: When operating the PRISM from an AC power source, the wall receptacle must be a three-wire, grounded, hospital grade outlet. Use only PRISM's original hospital grade AC power

plug and cord, or an equivalent hospital grade plug and cord. If in doubt about the integrity of the grounding of the main supply connection, the unit must be operated by battery power.

WARNING: DO NOT plug unit into multiple outlet power strip to avoid summation of leakage currents.

WARNING: Explosion hazard. Do not use the PRISM in the presence of flammable anesthetics.

WARNING: In the event of an adverse patient condition, the audio alarm will not sound if it has been temporarily silenced or disabled.

WARNING: For pacemaker patients, the HR may continue to count the pacemaker artifact during cardiac arrest or other arrhythmias. Keep pacemaker patients under close surveillance.

WARNING: Do not use in ambient temperatures above 40° C or below 5°C.

WARNING: For protection against fire, replace fuses only with those of the same type and rating.

WARNING: The alarms for some parameters are factory set to default to the OFF setting. This may not be consistent with the policies of your institution or the type of patients being monitored by the PRISM monitors.

1.3.2 Symbols

The following are cautionary symbols that appear on the Prism monitor and their definitions. You should familiarize yourself with these symbols and their meaning before using the Prism monitor.

Type CF Defibrillation Protected Equipment: Isolated patient connections comply with the allowable leakage current limits for direct cardiac application and are protected against the effects of defibrillation.

Attention: Consult accompanying documents.

Replace Fuses as Marked: For protection against fire, replace only with fuses of the same type and rating.

Caution: Dangerous voltage.

Alternating Current: 115 V @ 60 Hz, or 220-240 V @ 50 Hz.

Equipotential Connection: When external DC power is used, the equipotential connection must be used as a protective ground terminal.

Fuse: Voltage and current ratings appear adjacent to symbol.